

Fatigue behavior of kenaf fibre reinforced epoxy composites

ABSTRACT

Towards green material, fatigue life of epoxy and its unidirectional kenaf fibre reinforced epoxy composites were investigated. These specimens were hand lay-out made. The specimens were cycled to tension-tension fatigue loading at stress ratio of 0.5 and 5 Hz of frequency to determine the fatigue life and its life characteristic at given 5 stress levels. Fibre content ratios were found to affect fatigue life strongly on the low cycle fatigue regime as illustrated with stress level versus cycles to failure. It is found that kenaf fibre reinforced epoxy composites with higher fibre content posses higher load carrying capacity and degradation rates. The existing models developed by Mandell, Manson-Coffin and Hai-Tang were adopted to predict the fatigue life. Some of the models show minor similarities with the experimental data, but not universally applicable to predict the fatigue life when it comes with various amount of fibre volume.

Keyword: General fatigue; Kenaf fiber; Polymer matrix composites